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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/606,925	06/27/2003	Chang Yeon Kim	049128-5122	3864

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EXAMINER	
SHERMAN, STEPHEN G	
ART UNIT	**PAPER NUMBER**
2674	

DATE MAILED: 12/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/606,925	KIM ET AL.	
	Examiner	Art Unit	
	Stephen G. Sherman	2674	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 June 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,13-17,26-28* is/are rejected.

7)☒ Claim(s) *5-12 and 18-25* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 June 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 1-25-05
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:

On page 3, line 1 it states: "FIG. 1 a schematic..." The examiner suggests changing this to: "FIG. 1 is a schematic..."

On page 12, paragraph [0044], line 1 it states: "...and the data driver 46 may supplies a current signal..." The examiner suggests changing this to: "...and the data driver 46 may supply a current signal..."

Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-4, 14-17 and 27-28 are rejected under 35 U.S.C. 102(e) as being anticipated by Ishizuka et al. (US 6,756,951).

Regarding claim 1, Ishizuka et al. disclose a data-driving apparatus of an electro-luminescence display panel, comprising:

a display panel receiving a current signal to display an image (Figure 8, input image data); and

a data driver (Figure 8, items 200-203) having a plurality of current sink data drive parts (Figure 8, items 200-203. The examiner interprets that the anode line driving circuits could be current sink data drive parts.) in order to supply data to the display panel based on a constant current,

wherein the current sink data drive part comprises:

a current sink data drive integrated circuit (Figure 8, item 200) for supplying the data to the display panel based on the constant current, and

a reference current supply/path part (Figure 8, item 200) for supplying the constant current to the current sink data drive integrated circuit and, at a same time, supplying the same constant current to an adjacent current sink data driver in a cascade circuit configuration (Column 9, lines 10-15).

Regarding claim 2, Ishizuka et al. disclose the data-driving apparatus according to claim 1. Ishizuka et al. also disclose wherein the current sink data drive integrated circuit comprises:

a constant current switching device connected between a voltage source and a ground voltage source (Figure 11, Qe is connected to V_{BE} and to ground through R_{Q2}.); and

a plurality of constant current supply switching devices (Figure 11, Q1-Qm),

each connected to the ground voltage source (Figure 11, Q1-Qm are connected to ground through Qe and R_{Q2}.) to form a current mirror circuit with the constant current switching device for supplying the constant current to data lines if the panel by way of selecting switch devices corresponding to the constant current controlled at a 2n level through the constant current switching device (Column 6, line 54 to column 7, line 10).

Regarding claim 3, Ishizuka et al. disclose the data-driving apparatus according to claim 2. Ishizuka et al. also disclose wherein the current sink data drive integrated circuit further comprises:

a plurality of switches connected between the constant current supply switching devices and the data lines for controlling a supply time of the constant current supplied to the data lines to control a pulse width of a current signal (Figure 11, S1-Sm and column 6, line 54 to column 7, line 10).

Regarding claim 4, Ishizuka et al. disclose the data-driving apparatus according to claim 2. Ishizuka et al. also disclose wherein the constant current switching device and the constant current supply switching device comprise n-type MOSFETS (Column 9, lines 35-40).

Regarding claim 14, Ishizuka et al. disclose a data driving apparatus of an electro luminescence display panel, comprising:

a display panel receiving a current signal to display an image (Figure 8, input image data); and

a data driver (Figure 8, items 200-203) having a plurality of current source data drive parts (Figure 8, items 200-203. The examiner interprets that the anode line driving circuits could be current source data drive parts.) in order to supply data to the display panel based on a constant current,

wherein the current source data drive part comprises:

a current source data drive integrated circuit (Figure 8, item 200) for supplying the data to the display panel based on the constant current, and

a reference current supply/path part (Figure 8, item 200) for supplying the constant current to the current source data drive integrated circuit and, at a same time, supplying the same constant current to an adjacent current source data driver in a cascade circuit configuration (Column 9, lines 10-15).

Regarding claim 15, Ishizuka et al. disclose the data-driving apparatus according to claim 14. Ishizuka et I. also disclose wherein the current source data drive integrated circuit comprises:

a constant current switching device connected between a voltage source and a ground voltage source (Figure 11, Qe is connected to V_{BE} and to ground through R_{Q2}.); and

a plurality of constant current supply switching devices (Figure 11, Q1-Qm), each connected to the voltage source (Figure 11, Q1-Qm are connected to V_{BE}.) to form a current mirror circuit with the constant current switching device for supplying the constant current to data lines of the panel by selecting switch devices corresponding to the constant current controlled in a 2n level through the constant current switching device (Column 6, line 54 to column 7, line 10).

Regarding claim 16, Ishizuka et al. disclose the data-driving apparatus according to claim 15. Ishizuka et al. also disclose wherein the current source data drive integrated circuit further comprises:

a plurality of switches connected between the constant current supply switching devices and the data lines for controlling a supply time of the constant current supplied to the data lines to control a pulse width of a current signal (Figure 11, S1-Sm and column 6, line 54 to column 7, line 10).

Regarding claim 17, Ishizuka et al. disclose the data-driving apparatus according to claim 15. Ishizuka et al. also disclose wherein the constant current switching device and the constant current supply switching device comprise n-type MOSFETs (Column 9, lines 35-40).

Regarding claim 27, Ishizuka et al. disclose a data-driving method of an electro-luminescence display panel having

a pixel formed at each intersection part of scan lines and data lines (Figure 8, items E1,1-En,1, B1-Bn and A1-Am),

a scan driver to control the scan lines (Figure 8, item 30) and

a data driver to control the data lines (Figure 8, items 200-203) comprising steps of:

simultaneously supplying a constant current generated by an external voltage source to a current sink data integrated circuit and an adjacent current sink data integrated circuit, which are connected in a cascade circuit configuration within the data driver; and supplying data to the data lines based on the supplied constant current (Figure 8. The examiner interprets that the constant current IREF is simultaneously applied to item 201 and 202, which are arranged in a cascade configuration and which could be current sink circuits, through Iin of item 201 and Iin of item 202, since in Figure 9, the timing diagram shows timing between circuits 201 and 202 occurring at the same time.).

Regarding claim 28, Ishizuka et al. disclose a data-driving method of an electro-luminescence display panel having a pixel formed at each intersection part of scan lines and data lines (Figure 8, items E1,1-En,1, B1-Bn and A1-Am),

a scan driver to control the scan lines (Figure 8, item 30) and

a data driver to control the data lines (Figure 8, items 200-203), comprising steps of:

simultaneously supplying a constant current generated by an external voltage source to a current source data integrated circuit and an adjacent current source data integrated circuit, which are connected in a cascade circuit configuration within the data driver; and supplying data to the data lines based on the applied constant current (Figure 8. The examiner interprets that the constant current IREF is simultaneously applied to item 201 and 202, which are arranged in a cascade configuration and which could be current source circuits, through Iin of item 201 and Iin of item 202, since in Figure 9, the timing diagram shows timing between circuits 201 and 202 occurring at the same time.).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 13 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishizuka et al. (US 6,756,951) in view of Kim et al. (US 2002/0195967).

Regarding claim 13, Ishizuka et al. disclose the data-driving apparatus according to claim 1. Ishizuka et al. fail to teach wherein the cell driver comprises:

a sixth switching device formed between a cell drive voltage source VDD and the electro-luminescence cell for driving the electro-luminescence cell;

a seventh switching device connected to the cell drive voltage source to form a current mirror with the sixth switching device;

an eighth switching device connected to the seventh switching device, the scan line and the data line to respond to a signal of the data line;

a ninth switching device connected gate terminals of the sixth and seventh switching devices, the data line and the eighth switching device and

a capacitor Cst connected between the cell drive voltage source VDD and the gate terminals of the sixth and seventh switching devices.

Kim et al. disclose of a cell driver comprising:

a sixth switching device formed between a cell drive voltage source VDD and the electro-luminescence cell for driving the electro-luminescence cell (Figure 3, S3);

a seventh switching device connected to the cell drive voltage source to form a current mirror with the sixth switching device (Figure 3, S4);

an eighth switching device connected to the seventh switching device, the scan line and the data line to respond to a signal of the data line (Figure 3, item S1);

a ninth switching device connected gate terminals of the sixth and seventh switching devices, the data line and the eighth switching device (Figure 3, S2) and

a capacitor connected between the cell drive voltage source VDD and the gate terminals of the sixth and seventh switching devices (Figure 3, C).

Therefore it would have been obvious to "one of ordinary skill" in the art at the time the invention was made to use the cell driver of Kim et al. with the display panel of Ishizuka et al. in order to prevent a kick-back phenomenon and minimize a leakage current, thereby improving picture quality.

Regarding claim 26, Ishizuka et al. disclose the data-driving apparatus according to claim 14. Ishizuka et al. fail to teach wherein the cell driver comprises:

a sixth switching device formed between a ground voltage source GND and the electro-luminescence cell for driving the electro-luminescence cell;

a seventh switching device connected to the ground voltage source GND to form a current mirror with the sixth switching device;

an eighth switching device connected to the seventh switching device, the scan line and the data line to respond to a signal of the data line;

a ninth switching device connected gate terminals of the sixth and seventh switching devices, the data line and the eighth switching device; and

a capacitor Cst connected between the ground voltage source GND and the gate terminals of the sixth and seventh switching devices.

Kim et al. disclose of a cell driver comprising:

a sixth switching device formed between a ground voltage source GND and the electro-luminescence cell for driving the electro-luminescence cell (Figure 4, S3);

a seventh switching device connected to the ground voltage source GND to form a current mirror with the sixth switching device (Figure 4, S4);

an eighth switching device connected to the seventh switching device, the scan line and the data line to respond to a signal of the data line (Figure 4, S1);

a ninth switching device connected gate terminals of the sixth and seventh switching devices, the data line and the eighth switching device (Figure 4, S2); and

a capacitor connected between the ground voltage source GND and the gate terminals of the sixth and seventh switching devices (Figure 4, C).

Therefore it would have been obvious to "one of ordinary skill" in the art at the time the invention was made to use the cell driver of Kim et al. with the display panel of Ishizuka et al. in order to prevent a kick-back phenomenon and minimize a leakage current, thereby improving picture quality.

Allowable Subject Matter

7. Claims 5-12 and 18-25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The following is a statement of reasons for the indication of allowable subject matter: The primary reason for allowance of the claims is the inclusion of the manner in which the switching devices are connected to form current mirror circuits, specifically the fifth switching device in claims 5 and 18 and the fourth switching device in claims 9 and 22 for transmitting the constant current to the adjacent current drivers, which is not found in the prior art references.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen G. Sherman whose telephone number is (571) 272-2941. The examiner can normally be reached on M-F, 8:00 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Edouard can be reached on (571) 272-7603. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SS

PATRICK N. EDOUARD
SUPERVISORY PATENT EXAMINER

15 November 2005